Clean Air Act 112(r) Risk Management Program (RMP) SPCC/FRP E P C R A

CHEMICAL EMERGENCY PREVENTION & PLANNING Newsletter

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CHEMICAL EMERGENCY PREVENTION & PLANNING *Newsletter*

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eDisclosure -- EPA's Electronic Self-Disclosure System for EPCRA Violations

EPA is piloting the web-based system, eDisclosure, that allows companies to electronically self-disclose violations under EPA's Audit Policy. Facilities nationwide can use eDisclosure to disclose violations of the Emergency Planning and Community Right-to-Know Act (EPCRA).

What is eDisclosure?

- eDisclosure is a web-based system EPA is piloting for the regulated community to self-disclose environmental violations electronically and apply for penalty mitigation under EPA's Audit Policy.
- eDisclosure makes it easier and faster to self-report environmental violations. It also speeds up EPA's processing of self-disclosures by ensuring that each disclosure contains complete information.

What are the benefits of using eDisclosure?

- Under EPA's April 11, 2000 policy on "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations," commonly referred to as the "Audit Policy" (65 FR 19618), the Agency offers reduced penalties to companies that voluntarily discover, disclose, correct and prevent the recurrence of environmental violations.
- eDisclosure speeds up the processing of self-disclosures by ensuring that each electronic self-disclosure contains complete information.
    - The eDisclosure form has a number of built-in checks to verify that information entered into a field matches the required format. Additionally, to ensure the entire form is complete, it must be validated before it is submitted.
    - Submitters also must certify the truth, accuracy and completeness of the self-disclosure prior to submission. (Reduction of penalties under the Audit Policy is conditioned on the truth, completeness and accuracy of the submission.) The certification reduces the number of transactions between EPA and the submitter.

For more information, please see Electronic Self-Disclosure under the EPA Audit Policy at:
http://www.epa.gov/compliance/incentives/auditing/edisclosure.html

Emergency Response Program

The EPA Risk Management Program RMP) may require the facility that has a Program 2 or Program 3 process (*see box for details*), to implement an emergency response program, consisting of an emergency response plan, emergency response equipment procedures, employee training, and procedures to ensure the program is up-to-date. This requirement applies if your employees will respond to some releases involving regulated substances.

EPA recognizes that, in some cases (particularly for retailers and other small operations with few employees), it may not be appropriate for employees to conduct response operations for releases of regulated substances. For example, it would be inappropriate, and probably unsafe, for an ammonia retailer with only one full-time employee to expect that a tank fire could be handled without the help of the local fire department or other emergency responder. EPA does not intend to force such facilities to develop emergency response capabilities. At the same time, you are responsible for ensuring effective emergency response to any releases at your facility. If your local public responders are not capable of providing such response, you must take steps to ensure that effective response is available (e.g., by hiring response contractors).

Non-responding Facilities (§ 68.90(b))

EPA has adopted a policy for non-responding facilities similar to that developed by OSHA in its Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard (29 CFR 1910.120), which allows certain facilities to develop an emergency action plan to ensure employee safety, rather than a full-fledged emergency response plan. If your employees will not respond to accidental releases of regulated substances, then you need not comply with the emergency response plan and program requirements. Instead, you are simply required to coordinate with local response agencies to ensure that they will be prepared to respond to an emergency at your facility. This will help to ensure that your community has a strategy for responding to and mitigating the threat posed by a release of a regulated substance from your facility. To do so, you must ensure that you have set up a way to notify emergency responders when there is need for a response.

Coordination with local responders also entails the following steps:

- If you have a covered process with a regulated toxic, work with the local emergency planning entity to ensure that the facility is included in the community emergency response

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Emergency Response Team

RMP Categories (Programs 1, 2 and 3)

The Risk Management Program (40 CFR 68) defines the activities sources must undertake to address the risks posed by regulated substances in covered processes. To ensure that individual processes are subject to appropriate requirements that match their size and risks they may pose, EPA has classified them into three categories ("Programs").

Program 1 requirements apply to processes for which a worst-case release, as evaluated in the hazard assessment, would not affect the public. These are sources or processes that have not had an accidental release that caused serious offsite consequences. Remotely located sources and processes using listed flammables are primarily those eligible for this program.

Program 2 requirements apply to less complex operations that do not involve chemical processing (e.g., retailers, propane users, non-chemical manufacturers, and other processes not regulated under OSHA's PSM Standard).

Program 3 requirements apply to higher risk, complex chemical processing operations and to processes already subject to the OSHA PSM.

The OSHA PSM Standard (29 CFR 1910.119) reflects the key elements that the petrochemical industry, trade associations, and engineering societies have deemed essential to safe management of hazardous substances for complex, chemical-processing operations. EPA has adopted OSHA's PSM requirements as the Program 3 prevention program, with only minor changes in terminology. With few exceptions, processes assigned to Program 3 are already subject to the OSHA PSM Standard; the remaining Program 3 processes are in industry sectors that have a significant accident history.

plan prepared under EPCRA regarding a response to a potential release.
- If you have a covered process with a regulated flammable, work with the local fire department regarding a response to a potential release.

What Is "Response"?

EPA interprets "response" to be consistent with the definition of response specified under OSHA's HAZWOPER Standard. OSHA defines emergency response as "a response effort by employees from outside the immediate release area or by other designated responders ... to an occurrence which results, or is likely to result, in an uncontrolled release of a hazardous substance." The key factor here is that responders are designated for such tasks by their employer. This definition excludes "responses to incidental releases of hazardous substances where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel" as well as "responses to releases of hazardous substances where there is no potential safety or health hazard (i.e., fire, explosion, or chemical exposure)."

However, due to the nature of the regulated substances subject to EPA's rule, only the most minor incidents would be included in this exception. In general, most activities will qualify as a response due to the immediacy of the dispersion of a toxic plume or spread of a fire, the volatilization of a spill, and the threat to people on and off site. As a result, if you will have your employees involved in any substantial way in responding to releases, you will need to develop an emergency response program. Your emergency response procedures need only apply to "response" actions; other activities will be described in your maintenance and operating procedures. Although you do not need to describe these activities in your risk management plan, document your efforts and keep a record of:

- The emergency contact (i.e., name or organization and number) that you will call for a toxic or flammable release.
- The organization that you worked with on response procedures.

Elements of an Emergency Response Program (§ 68.95)

If you will respond to releases of regulated substances with your own employees, your emergency response program must consist of the following elements:

- An emergency response plan (maintained at the facility) that includes:
- Procedures for informing the public and emergency response agencies about releases
- Documentation of proper first aid and emergency medical treatment necessary to treat human exposures
- Procedures and measures for emergency response
- Procedures for using, inspecting, testing, and maintaining your emergency response equipment
- Training for all employees in relevant procedures
- Procedures to review and update, as appropriate, the emergency response plan to reflect changes at the facility and ensure that employees are informed of changes.

Relationship to HAZWOPER

If you choose to establish and maintain onsite emergency response capabilities, then you will be subject to the detailed provisions of the OSHA and EPA HAZWOPER Standard. HAZWOPER covers preparing an emergency response plan, employee training, medical monitoring of employees, recordkeeping, and other issues. Call your state or federal district OSHA office for more information on complying with the HAZWOPER Standard (find contact names and addresses for OSHA offices at http://www.osha.gov/oshdir/r10.html/).
State and local governments in states without a delegated OSHA program are subject to HAZWOPER under EPA's 40 CFR part 311.

How Does the Emergency Response Program Apply?

The requirements for the emergency response program are intended to apply across all covered processes at a facility. Although certain elements of the program (e.g., how to use specific items of response equipment) may differ from one process to another, EPA does not intend or expect you to develop a separate emergency response program for each covered process. With this in mind, you should realize that your emergency response program will probably apply to your entire facility, although technically it need only apply to covered processes. For example, a facility may have two storage tanks, one containing slightly more than a threshold quantity of a regulated substance and one with slightly less. The facility is likely to adopt the same response approach (e.g., procedures, equipment, and training) for releases whether or not the process is "covered." Similarly, a facility may have two adjacent flammable storage

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tanks, one containing a regulated substance above the threshold and the other containing another, unlisted flammable. The facility is likely to adopt the same approach for releases whether or not the process is "covered."

Developing an Emergency Response Program

The development of an emergency response program should be approached systematically. The following steps outline a systematic approach that can serve as the framework for the program development process in each of these cases. Following these initial steps will allow you to conduct the rest of the process more efficiently.

1) *Form an emergency response program team*

The team should consist of employees with varying degrees of emergency response responsibilities, as well as personnel with expertise from each functional area of your facility. You should consider including persons from the following departments or areas:

- Maintenance
- Operations or line personnel
- Upper and line management
- Legal
- Fire and hazmat response
- Environmental, health, and safety affairs
- Training
- Security
- EPCRA section 302 emergency coordinator (if one exists)
- Public relations
- Personnel

Of course, the membership of the team will need to be more or less extensive depending on the scope of the emergency response program. A three-member team may be appropriate for a small facility with a couple of process operators cross-trained as fire responders, while a facility with its own hazmat team and environmental affairs department may need a dozen representatives.

The first responders at the scene of a release of a hazardous substance are usually fireman or state or local police. They conduct the initial assessment of the situation and take emergency actions such as fighting a fire, securing the area, or re-routing traffic.

2) *Collect relevant facility documents*

Members of the development team should collect and review all of the following:

- Site plans
- Existing emergency response plans and procedures
- Submissions to the LEPC under EPCRA sections 302 and 303
- Hazard evaluation and release modeling information
- Hazard communication and emergency response training
- Emergency drill and exercise programs
- After-action reports and response critiques
- Mutual aid agreements

3) *Identify existing programs to coordinate efforts*

The team should identify any related programs from the following sources:

- Corporate- and industry-sponsored safety, training, and planning efforts
- Federal, state, and local government safety, training, and planning efforts

4) *Determine the status of each required program element*

Using the information collected, you should assess whether each required program element is:

- In place and sufficient to meet the requirements of RMP (part 68)
- In place, but not sufficient to meet the requirements of RMP (part 68), or
- Not in place.

This examination will shape the nature of your efforts to complete the emergency response program required under the Risk Management Program. For example, if you are already in compliance with OSHA's HAZWOPER Standard, you have probably satisfied most, if not all, of the requirements for an emergency response program.

Front line local responders battle a blaze at a chemical factory.

(Reference: CRAIM)

Hazards Versus Risks

Dialogue between a regulated facility and the community will be concerned with both hazards and risks; it is useful to be clear about the difference between them.

Hazards are inherent properties that cannot be changed. Chlorine is toxic when inhaled or ingested; propane is flammable. There is little that you can do with these chemicals to change their toxicity or flammability. If you are in an earthquake zone or an area affected by hurricanes, earthquakes and hurricanes are hazards. When you conduct your hazard review or process hazards analysis, you will be identifying your hazards and determining whether the potential exposure to the hazard can be reduced in any way (e.g., by limiting the quantity of chlorine stored on-site).

Risk is usually evaluated based on several variables, including the likelihood of a release occurring, the inherent hazards of the chemicals combined with the quantity released, and the potential impact of the release on the public and the environment. For example, if a release during loading occurs frequently, but the quantity of chemical released is typically small and does not generally migrate off site, the overall risk to the public is low. If the likelihood of a catastrophic release occurring is extremely low, but the number of people who could be affected if it occurred is large, the overall risk may still be low because of the low probability that a release will occur. On the other hand, if a release occurs relatively frequently and a large number of people could be affected, the overall risk to the public is high.

The EPA Risk Management Program (RMP) does not require you to assess risk in a quantitative way because, in most cases, the data you would need to estimate risk levels (e.g., one in 100 years) are not available. Even in cases where data such as equipment failure rates are available, there are large uncertainties in using that data to determine a numerical risk level for your facility, because your facility is probably not the same as other facilities, and your situation may be dynamic. Therefore, you may want to assign qualitative values (high, medium, low) to the risks that you have identified at your facility, but you should be prepared to explain the terms if you do. For example, if you believe that the worst-case release is very unlikely to occur, you must give good reasons; you must be able to provide specific examples of measures that you have taken to prevent such a release, such as installation of new equipment, careful training of your workers, rigorous preventive maintenance, etc. You should also be able to show documentation to support your claim.

Be Prepared ..... For Anything!

A local community celebration featured the ascension of several hot air balloons. Some of the balloons drifted over a chemical plant and got caught in a strong downward air current. They were unable to remain aloft and several came down inside the plant! The situation was potentially dangerous because hot air balloons use open flame gas burners to heat the air, and the plant handled flammable materials. There were also a number of power lines that the balloonists had to avoid as they made emergency landings. Fortunately the plant operators and emergency response team members were very well trained and experienced. While their training and practice had never anticipated an event like this, they were able to use their knowledge and emergency response training to safely and effectively deal with the situation. All of the balloons were safely retrieved, and there were no injuries or significant damage.

Do You Know?

- Good emergency response training, practice, and drills can help you be prepared to deal with many emergency situations, even those which are difficult to anticipate. The specific events we use for drills may never happen, but something similar might. One important reason for drills is to learn how to react to emergency situations and to be able to think in an emergency.

What You Can Do

- Know the emergency response plans for your facility, and participate in training, drills, and practice sessions so you will be ready in case of a real emergency.
- Be aware of local special events, how they might impact your plant, and how your plant might impact the event. For example, in a plant in China, the plant manager said that he had to be prepared for the possibility that burning embers from fireworks would land in the plant during Chinese New Year celebrations in a nearby residential area.
- Are you located near a sports stadium, a fairground or park, a convention center, or a major highway which can have heavy traffic during major community events? How could external events impact your plant? Can emergency responders get to your plant quickly during high traffic events?

(Source: AIChE)

Dangers of BLEVE to Emergency Responders

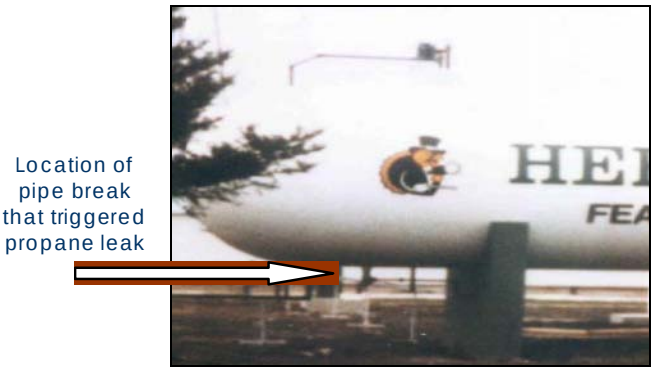
On April 9, 1998, two volunteer firefighters were killed and seven other people were injured when a blazing 18,000- gallon propane tank exploded at the Herrig Brothers poultry farm in Albert City, Iowa. Arriving at 11:21 p.m., the firefighters had found the large storage tank engulfed in flames hundreds of feet high. The noise of gas escaping the tank through pressure relief valves was "like standing next to a jet plane with its engines at full throttle," a witness said. Minutes later the victims were struck by heavy metal fragments when the tank exploded.

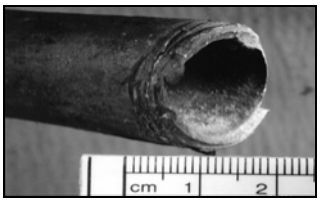
The propane tank fire started after two teenagers driving an all-terrain vehicle plowed into unprotected propane piping at the farm. This aboveground piping ran from the propane storage tank to vaporizers, which fueled heaters located in barns and other farm structures. The 42- foot long, cigar-shaped storage tank contained propane liquid and vapor under pressure, and the tank was about half full at the time of the incident.

The collision severed one pipe and damaged another, triggering a significant propane leak under the tank. About five minutes later, propane vapor leaking from the damaged pipes ignited and burst into flames, engulfing the tank and beginning to heat the propane inside.

Because of the flames, arriving firefighters could not approach a manual shut-off valve to stop the propane leak, and they decided to let the tank fire burn itself out. The fire chief on the scene believed that in the event of an explosion, fragments would be thrown from the tank's two dome shaped welded ends. The areas near the sides of the tank, he believed, would be relatively safe. Shortly after their arrival, firefighters approached the sides of the flaming tank and began spraying the surrounding buildings to prevent the spread of fire. Just seven minutes later, the burning propane tank ruptured completely, experiencing a Boiling Liquid Expanding Vapor Explosion or BLEVE.

(A Boiling Liquid Expanding Vapor Explosion or BLEVE can occur when fire heats and weakens the walls of a storage tank, particularly in the region above the stored liquid where cooling is less effective. At some point the weakened tank can no longer withstand the internal pressure and the tank fails catastrophically, often sending fragments in many directions.)





Fracture surface of the one inch pipe

The propane tank was blown into at least 36 pieces, some of which flew 100 feet or more. Some of the shrapnel struck firefighters; other pieces smashed into buildings, leaving nearly $250,000 in property damage.

The U.S. Chemical Safety Board investigated this incident to determine root causes of the fire, the explosion, and the firefighter fatalities and injuries.

Propane Tank And Piping Lacked Collision Protection

The CSB found the initial fire likely could have been avoided by protecting the aboveground propane piping from a motor vehicle collision. Had a fence or barrier been in place, the vehicle driver likely would not have collided with the propane piping and no leak or fire would have occurred. Although propane delivery trucks came frequently to the farm — driving into close proximity of the storage tank and the aboveground piping — neither the tank nor the piping was protected by any fences, barriers, or posted warning signs.

Despite a requirement of Iowa state law, the Iowa State Fire Marshal evidently had not received any information about the propane system installed at Herrig Brothers. The CSB found that neither the farm

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owners nor the propane installers appeared to believe it was their responsibility to provide construction plans to the marshal. Had the marshal's office reviewed the plans and required a protective barrier around the aboveground pipes, the collision and fire would likely have been prevented.

➢ Flawed Design Of Propane System

The propane piping was equipped with a safety feature designed to prevent a major leak. An "excess flow" valve installed on the tank was designed to close if the propane flow in the piping exceeded about 200 gpm — the kind of massive flow that would be expected with a complete breakage of the pipe. However, the piping installed immediately downstream of the excess flow valve was too narrow to allow the flow rate to ever reach 200 gpm, even with piping completely severed further downstream.

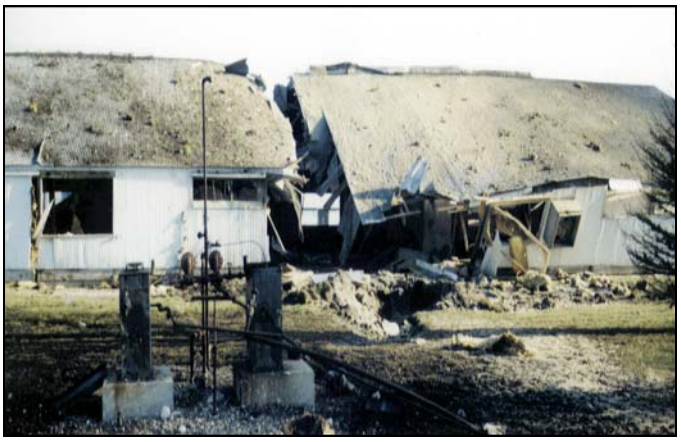
The excess flow valve never closed and the propane leak continued unabated, feeding the fire until the time of the explosion. Had the downstream piping been large enough, the excess flow valve would have closed after the collision, arresting the flow of propane and greatly reducing the severity of any fire. Most likely, no explosion would have occurred.

➢ Better Training Could Have Saved Firefighters

The CSB determined that better training could have prevented the firefighter deaths and injuries. The firefighters were not prepared for the dangers of a BLEVE, where tank debris can fly in any direction, not just from the ends. Unaware of the danger, they had positioned themselves too close to the sides of the burning tank.

The firefighters had viewed a safety training video produced by the National Propane Gas Association (NPGA). The video recommended that firefighters approach a burning propane tank from the sides, and the accompanying training manual explained that pieces from a ruptured tank "can and will, most likely, travel in the direction it is pointed" i.e. along the long axis of the tank. In this incident, the Fire Chief reported that he relied on NPGA and other similar training guidelines and believed that avoiding the ends of the burning tank would protect the firefighters.

The firefighters also likely did not realize just how quickly a BLEVE can take place, typically within 10-30 minutes of the start of a fire. The firefighters had arrived about 15 minutes after the tank ignited, and the explosion occurred just seven minutes later. The speed with which these explosions can occur is an important consideration in deciding how to respond to a propane tank fire, the CSB said. When a boiling liquid expanding vapor explosion is possible, the best emergency response may be to retreat to a safe distance and rely on unmanned firefighting equipment.



Damage caused by impact of large tank fragments

(The CSB recommended that the NPGA revise its videos, manuals, and other training materials to provide appropriate instruction on responding to potential tank BLEVEs.)

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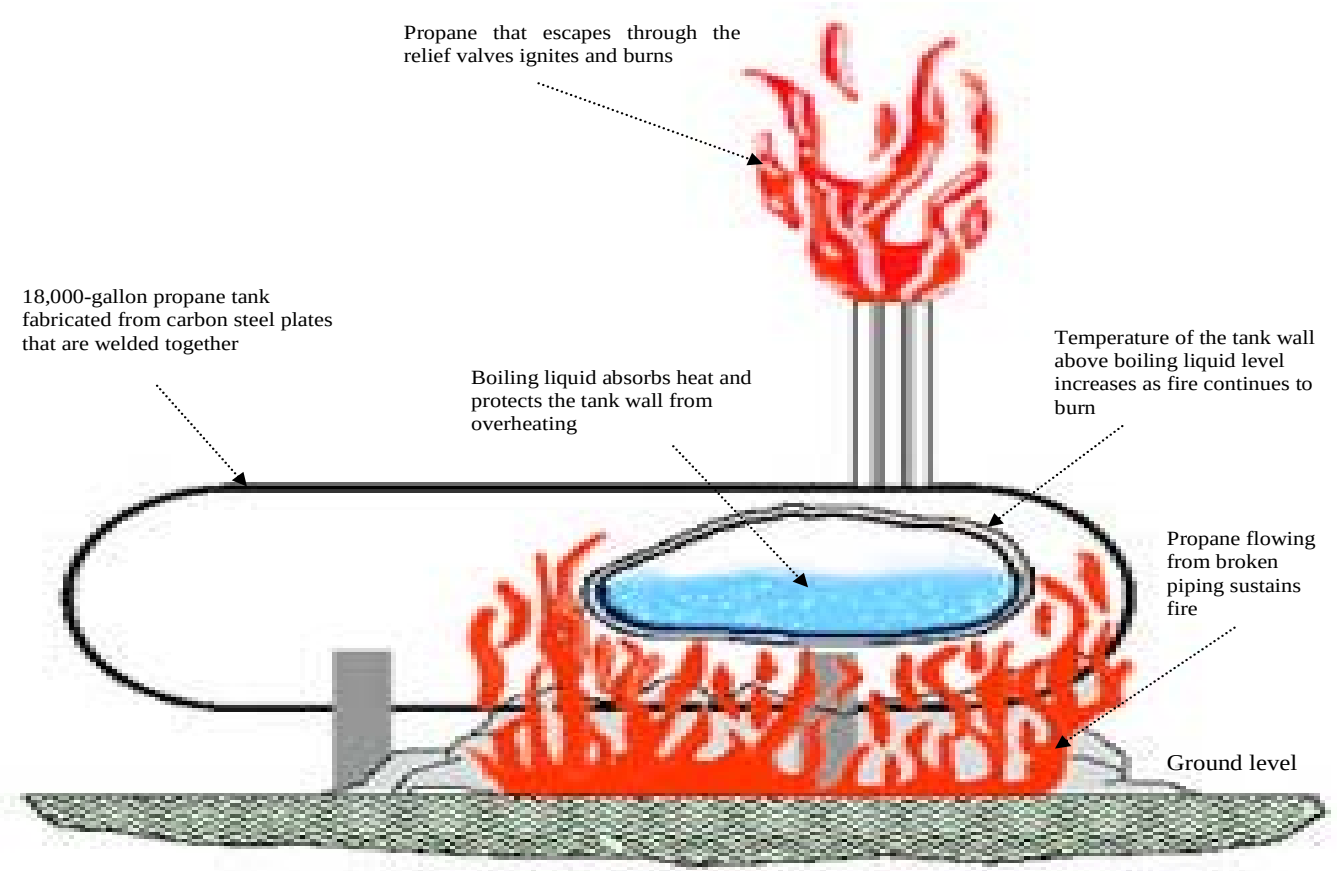
INVESTIGATION CAUSES D.O.T. GUIDEBOOK IMPROVEMENT

CSB's investigation also uncovered a potentially misleading statement in the U.S. Department of Transportation's North American Emergency Response Guidebook. The Guidebook is carried in thousands of fire trucks around the country, and firefighters often consult this reference when responding to hazardous material incidents. The 1996 version of the Guidebook stated that responders should "always stay away from the ends of tanks" when fighting flammable liquid tank fires. This advice could give the false impression that the sides of the tank are safe in such cases. On the advice of the Board, DOT revised the year 2000 Guidebook, which now counsels firefighters who face propane fires to "always stay away from tanks engulfed in fire."

Events Leading to the BLEVE



1. After the piping is broken, propane begins leaking from the tank and flows along the ground surface.
2. Soon after ignition of the leaking propane, a fire burns out of control in the vicinity of the 18,000 gallon tank.
3. The fire heats the propane inside the tank, causing it to boil and vaporize.
4. The pressure inside the tank increases as the temperature of the propane increases.
5. When pressure inside the tank reaches about 250 psi, the relief valves open to vent the tank. The propane escaping from the relief valves ignites and burns.
6. As boiling continues, the pressure inside the tank exceeds 250 psi, the temperature of the tank wall increases, and the strength of the steel used to construct the tank decreases.
7. At some point, the weakened steel can no longer resist pressure-induced forces inside the tank so the wall of the tank ruptures, allowing propane to escape rapidly into the surrounding atmosphere.
8. Immediately following rupture, the escaping propane ignites, resulting in an explosion that causes the tank wall to separate into at least 36 pieces. Fire quickly consumes the remaining propane.
9. Tank fragments are propelled at a high velocity in many different directions.

(Reference: US Chemical Safety Board)

Safety Alert

VACUUM is a Powerful Force!

Here's what happened.....

Figure 1

(Figure 1) When steam cleaning the interior of railcar most of the air was displaced. When work was stopped at the end of the day all valves were closed. As the car cooled, the steam condensed, creating a vacuum, causing the railcar to collapse.

Figure 2

(Figure 2) During painting, a tank's vacuum relief valve was covered with plastic to prevent potential contamination of the contents. When liquid was pumped out the plastic covering prevented air/nitrogen from replacing the liquid volume. A vacuum developed leading to the partial collapse of the tank.

COMMON causes of vacuum damage to tanks include:

- The vessel has insufficient strength to withstand a vacuum; a vessel with a 50 psig (or higher) ASME pressure rating is frequently capable of withstanding a full vacuum;
- Vacuum is created when liquid is transferred from a vessel or when hot vapor condenses, neither of which is replaced by air/nitrogen or other non-condensable material, and
- A vacuum relief system is not present or is not functioning properly.

Things to consider to prevent equipment damage from vacuum:

- ✓ install a system to provide vacuum relief. As one of the pictures graphically demonstrates, railcars and trucks MAY NOT have this equipment. These devices will allow air to enter the vessel and prevent vacuum formation.
- ✓ if installed, vacuum relief devices must be inspected and tested on a regular basis. They are just as critical as pressure relief devices.
- ✓ understand which vessels in your department are not rated for full vacuum. These are the vessels vulnerable to vacuum related incidents.
- ✓ demonstrate caution whenever liquids are transferred or vapors are condensed because of shutdown, maintenance, cleaning, etc...
- ✓ be sure that the addition of air, nitrogen, or other vacuum breaking materials are not impeded.

(Reference: AIChE)